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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/774,559

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EXAMINER

ZHENG, LOIS L

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/774,559	<b>Applicant(s)</b> BIDDULPH ET AL.	
	<b>Examiner</b> LOIS ZHENG	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6,8,9 and 19-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8,9 and 19-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 19-21 are amended in view of applicant's amendment filed 29 August 2008. Claims 7 and 10-18 are canceled in view of applicant's amendment. Therefore, claims 1-6, 8-9 and 19-23 are currently under examination.

### ***Status of Previous Rejections/Objections***

2. The objection of claim 19 is withdrawn in view of applicant's amendment filed 29 August 2008.

3. The rejection of claim 20 under 35 U.S.C. 112, second paragraph, is withdrawn in view of applicant's amendment filed 29 August 2008.

### ***Note Regarding Previous/Current Art Rejections***

4. The examiner apologizes for the confusion regarding rejection of claims 1-6, 8-9 and 19-23 based on WO 02/07902(WO'902) as set forth in paragraph 8 of the previous Non-Final Office Action mailed 1 April 2008. The first sentence summarizing the rejection ground was correctly stated. However, since the examiner prepared the office action by editing the previous Final Office Action mailed 17 August 2007, some paragraphs that were intended to be deleted, such as the paragraphs regarding teachings of Huvar US 4,349,392(Huvar) and the combination of WO'902 in view of Huvar, were mistakenly left behind. The rejection of claims 1-6, 8-9 and 19-23 as set forth in paragraph 8 of the previous Non-Final Office Action mailed 1 April 2008 was based solely on WO'902 alone, not WO'902 in view of Huvar.

Since applicant has raised arguments in applicant's remarks filed 29 August rebutting examiner's prima facie case of obviousness based on routine optimization of carboxylic acid chelate and sulfate/nitrate concentrations in the solution of WO'902, the examiner considers that applicant has had an opportunity to address and has addressed the new rejection ground despite of the confusion on the references. Therefore, the examiner does not consider further Non-Final Action is needed for clarification.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-6, 8-9 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/07902(WO'902).

WO'902 teaches an anticorrosive aqueous acidic coating solution free of hexavalent chromium, wherein the coating solution comprises 0.02mol/l – 0.58mol/l of Cr(III), 0.1mol/l – 0.42mol/l of phosphate ions incorporated from phosphoric acid or sodium phosphate, 0.001mol/l – 0.1mol/l of iron, cobalt and/or nickel ions. WO'902 also teaches that the coating solution comprises one or more citric acid, tartaric acid, malonic acid as complexing agents to complex the Cr(III) ions and to regulate the chrome(III) hydroxide precipitate on the metal surface. The pH of the coating solution is maintained between 1 and 4 by using nitric or sulfuric acids. WO'902 further teaches

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that the phosphate is favorably added for the formation of a dark conversion coating and iron, cobalt and/or nickel are added for the formation of a black color coating. See last paragraph on page 1 – bottom of page 2 of the translation.

Regarding claims 1-6, 8-9, 19-20 and 22-23, the one or more citric acid, tartaric acid and malonic acid as taught by WO'902 read on the claimed chelate. The nitrate and sulfate ions from the nitric or sulfuric acid used for pH control as taught by WO'902 read on the claimed sulfate and/or nitrate ions. The iron, cobalt and nickel ions as taught by WO'902 read on the claimed transition metal or metalloid.

In addition, the component concentrations of Cr(III) ions, phosphorous anions, Fe/Co/Ni ions, the pH value ranges and the Cr(III) to Fe/Co/Ni ratio range(i.e. as calculated from the concentrations of Cr(III) ions and Fe/Co/Ni ions) in the coating solution of WO'902 overlap the claimed component concentration ranges, the claimed pH value range and the claimed Cr(III) to transitional metal or metalloid range. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed component concentrations and pH range from the disclosed ranges of WO'902 would have been obvious to one skilled in the art since WO'902 teaches the same utilities in its disclosed component concentration ranges, pH value range, and Cr(III) to Fe/Co/Ni ratio range.

With respect to the claimed amounts of organic chelate, the carboxylic acids as taught by WP'902 such as citric acid, tartaric acid, malonic acid are used to complex the Cr(III) ions and to regulate the chrome(III) hydroxide precipitate on the metal surface(page 2 lines 20-24). Therefore, WO'902 teaches that the carboxylic aids such

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as citric, tartaric and malonic acids are result effective variables. One of ordinary skill in the art would have found it obvious to have varied the concentration of the carboxylic acids in the coating solution of WO'902 via routine optimization in order to perform the desired complexing of Cr(III) and to achieve desired amount Cr(III) hydroxide precipitation.

With respect to the claimed amount of sulfate and nitrate ions, WP'902 teaches that sulfuric and nitric acids are used to control pH of the coating solution. Therefore, the concentrations of sulfate and nitrate ions are result effective variables. One of ordinary skill in the art would have find it obvious to have varied the amount of sulfate and nitrate ions in the coating solution of WO'902 via routine optimization in order to achieve desired pH.

Regarding claim 21, WO'902 teaches that phosphate ions can be used to form a dark conversion coating(page 2, middle section). Although WO'902 does teach several phosphate anion containing compounds suitable for such a purpose, the scope of WO'902's teaching includes just one of such phosphate anion containing compounds. Therefore, the examiner concludes that teachings of WO'902 meet the claimed limitation of "wherein the phosphorous anions consisting of phosphate anions".

7. Claims 1-6, 8-9 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima et al. US 6,719,852 B2(Oshima) in view of WO 02/07902 (WO'902).

Oshima teaches an aqueous acidic coating solution that is free of hexavalent chromium(abstract), wherein the coating solution comprises 0.2-5g/l of trivalent

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chromium ions(col. 4 lines 14-21), 0.2-10g/l of cobalt ions(col. 4 lines 33-45), 1-50g/l of inorganic salts of nitric or sulfuric acid(col. 4 lines 54-60), 0.1-50g/l of phosphoric acid (col. 4 lines 61-67) and 1-30g/l of carboxylic acids, such as citric acid, tartartic acid, malonic acid and succinic acid (col. 5 lines 1-7) and 0.2-13g/l of oxalic acid(col. 4 lines 27-32). The coating solution of Oshima has a pH of 0.5-4(col. 5 lines 8-10).

Regarding claims 1-6, 8-9, 19-20 and 22-23, the oxalic acid or any of the carboxylic acids listed above as taught by Oshima read on the claimed chelate. The nitrate and sulfate ions from the inorganic salts of nitric or sulfuric acid as taught by Oshima read on the claimed sulfate and/or nitrate ions. The cobalt ions as taught by Oshima read on the claimed transition metal or metalloid.

However, even though Oshima teaches various color finishes in its examples (Table 4). Oshima does not explicitly teach that the coating solution can produce a black chromate coating as claimed.

The teachings of WO'902 are discussed in paragraph 8 above. WO'902 further teaches that cobalt, iron and/or nickel in the amounts of 0.001 mol/l and 0.1 mol/l each can be added to promote a black color film(translation, page 2 lines 4-6 from the bottom). Presence of phosphate also helps formation of a dark conversion coating(page 2 lines 25-32). Black pigments such as carbon black in an amount of 5-20g/l can also be added according to WO'902(translation, page 3 two lines after "Day 2").

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated cobalt, nickel and/iron in a concentration of 0.001-0.1mol/l each and back

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pigments such as carbon black in an amount of 5-20g/l as taught by WO'902 into the coating solution of Oshima in order to produce a black chromate coating. In addition, WO'902 teaches a coating solution that has significantly the same coating components as the coating solution of Oshima. The teachings of Oshima and WO'902 further show that different coating component concentrations result in different coating colors.

Therefore, one of ordinary skill in the art would have found it obvious to have varied the concentrations of the coating components in the coating solution of Oshima in order to achieve a desired coating color such as the black color coating as claimed.

In addition, the component concentrations of Cr(III) ions, phosphorous anions, Co ions, oxalic acid and/or carboxylic acids, Cr(III) ion/Co ion ratio and the pH value in the coating solution of Oshima in view of WO'902 overlap the claimed component concentration ranges and the claimed pH value range. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed component concentrations, Cr(III)/transitional metal or metalloid ion ratio and pH ranges from the disclosed ranges of Oshima in view of WO'902 would have been obvious to one skilled in the art since Oshima in view of WO'902 teach the same utilities in their disclosed component concentration, Cr(III)/Co ion ratio and pH value ranges.

Regarding claim 21, although Oshima teaches at least one phosphate anion containing compounds(col. 4 lines 61-67), the scope of Oshima's teaching includes just one of such phosphate anion containing compounds. Therefore, the examiner concludes that teachings of Oshima meet the claimed limitation of "wherein the phosphorous anions consisting of phosphate anions".



***Response to Arguments***

8. Applicant's arguments filed 29 August 2008 have been fully considered but they are not persuasive.

Applicant's arguments with respect to the combination of WO'902 and Huvar are moot for the same reason as set forth in paragraph 4 above.

In the remarks, applicant argues that routine optimization of carboxylic acid chelate and sulfate/nitrate ions is not inherent from the teaching of WO'902 and is merely "obvious to try".

The examiner does not find applicant's argument persuasive because WO'902 clearly teaches that carboxylic acids such as citric acid, etc. are used to complex the trivalent Cr ions to regulate the precipitation of Cr(III) hydroxide to the substrate surface during conversion coating. Therefore, one of ordinary skill in the art would have realized, from the teaching of WO'902, that the concentration or the amount of carboxylic acid complexer is a result effective variable because it directly affects the precipitation of the Cr(III) hydroxide, the formation and the quality of the coating material. One of ordinary skill in the art would have found it obvious to have varied the concentration of the carboxylic acids in the coating solution of WO'902 via routine optimization in order to perform the desired complexing of Cr(III) and to achieve desired amount Cr(III) hydroxide precipitation.

In addition, WO'902 teaches that sulfuric and nitric acids are used to control pH of the coating solution. Therefore, one of ordinary skill in the art would have learned, from the teachings of WO'902, that the concentrations of sulfate/nitrate ions are result

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effective variables because they directly affects the pH of the coating solution, which ultimately affects the coating process and the coating quality. One of ordinary skill in the art would have find it obvious to have varied the amount of sulfate and nitrate ions in the coating solution of WO'902 via routine optimization in order to achieve and maintain desired pH in the coating solution.

Applicant further argues that Oshima differs from the claimed invention because it does not teach that its coating solution produces a black coating. Examples 1-2 of Oshima produce pale blue coatings even though they use 0.2 and 0.5g/l of Co, which are within the range of Co in the coating solution of WO'902 to produce a black coating. Applicant also argues that the combination of Oshima in view of WO'902 is based on improper use of hindsight.

The examiner does not find applicant's argument persuasive. As set forth in paragraph 7 above, the formation of a black conversion as taught by WO'902 is a result of a combination of multiple coating components in suitable ranges, such as phosphate, cobalt, iron, nickel, black pigments, etc. Cobalt as shown in Examples of 1-2 of Oshima is just one of the contributing factors. In addition, WO'902 teaches a coating solution that has significantly the same coating components as the coating solution of Oshima with overlapping coating component concentrations, which result in different coating colors. Therefore, one of ordinary skill in the art would have found it obvious to have varied the concentrations of the coating components in the coating solution of Oshima in order to achieve a desired coating color such as the black color coating as claimed.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

LLZ